

Conservation Assessment for *Valeriana uliginosa* Marsh Valerian



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This Conservation Assessment/Approach was prepared to compile the published and unpublished information on the subject taxon or community; or this document was prepared by another organization and provides information to serve as a Conservation Assessment for the Eastern Region of the Forest Service. It does not represent a management decision by the US Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject taxon, please contact the Eastern Region of the Forest Service Threatened and Endangered Species Program at 310 Wisconsin Avenue, Suite 580 Milwaukee, Wisconsin 53203.

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EXECUTIVE SUMMARY

This Conservation Assessment provides information pertaining to the life history, habitat, distribution and abundance, viability and potential threats, and future monitoring of marsh valerian (*Valeriana uliginosa*).

Valeriana uliginosa is a perennial herb that grows 0.5 -1 m tall. It has compound leaves on the stem and basal rosette leaves. It produces rounded flower heads 3-15 cm across that are comprised of many tiny white flowers in late May - July. Reproduction is more common by rhizomes (Meyer 1951), although the dioecious plants are pollinated by insects and produce seeds.

Valeriana uliginosa inhabits boreal open marly (calcareous) fens and glades in wooded swamps. This species is usually associated with *Thuja occidentalis*, *Larix laricina* and several species of *Carex*.

Valeriana uliginosa is apparently secure in its global distribution, and is fairly common in Michigan, but is listed as a Threatened species in Wisconsin. *Valeriana uliginosa* does not occur in Minnesota.

Potential threats include forest encroachment, wetland impacts, logging, herbivory, and possible impact from medicinal plant collection. Susan Trull reports an invasive *Valerian* recently becoming dominate on the Ottawa National Forest. Lack of cedar regeneration may also impact *Valeriana*.

ACKNOWLEDGEMENTS

PLANTS' vascular plant nomenclature, most phylogeography, and core attribute data for the United States and its Caribbean territories are provided under a cooperative agreement with John Kartesz and his staff at the Biota of North America Program (BONAP).

Data Acquisition– I appreciate the cooperative effort from the following organizations and individuals:

- Department of Natural Resources Ecological Services - Steve Wilson
- Wisconsin Biomapper
- Wisconsin Department of Natural Resources Natural Heritage Inventory
- University of Minnesota – J. F, Bell Museum of Natural History Herbarium
- Linda Parker, Forest Ecologist Chequamegon-Nicolet National Forest
- Susan Trull, Forest Botanist, Ottawa National Forest
- Jack Greenlee, Forest Plant Ecologist, Superior National Forest (also provided Chippewa National Forest data)
- Craig Anderson, Wisconsin DNR – Bureau of Endangered Resources
- Sharon Nelson, Minnesota Heritage Program/MN County Biological Survey
- Carmen Converse, Minnesota Heritage Program/MN County Biological Survey
- Anita F. Cholewa, Bell Museum of Natural History-University of Minnesota
- Vermilion Community College Document Delivery Service
- Michael Fashoway, Michigan Natural Features Inventory
- Steven Spickerman, Chequamegon-Nicolet National Forest
- Gary Fewless, Cofrin Center for Biodiversity, U of Wisconsin – Green Bay

NOMENCLATURE AND TAXONOMY

Classification:

Kingdom	- Plantae – Plants
Subkingdom	- Tracheobionta – Vascular plants
Superdivision	- Spermatophyta – Seed plants
Division	- Magnoliophyta – Flowering plants
Class	- Magnoliopsida – Dicotyledons
Subclass	- Asteridae –
Order	- Dipsacales –
Family	- Valerianaceae
Genus	- Valeriana L. – Valerian
Species	- Valeriana uliginosa (Torr. & Gray)
Synonym	Valeriana sitchensis Bong. subsp. uliginosa (Torr. & A.Gray) F.G.Mey. Valeriana sitchensis Bong. var. uliginosa (Torr. & A.Gray) B.Boivin Valeriana sylvatica Banks ex Richardson var. uliginosa Torr. & A.Gray

DESCRIPTION OF SPECIES

The Natural Resource Conservation Service Plant database

(http://plants.usda.gov/cgi_bin/topics.cgi), lists 4 North American genera in

Valerianaceae and 16 species in *Valeriana*. *Valeriana uliginosa* is a coarse, perennial herb that grows 0.5 -1 m tall. The opposite basal leaves are pinnately compound, whereas the basal rosette leaves are entire or with one or two lobes. It produces an ovate flower heads 3-15 cm across that are comprised of many tiny white flowers that appear in late May - July. The white flowers are 5-7 mm and produce lance-shaped to ovate-oblong achenes 3-4 mm long.



USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913.
Illustrated flora of the northern states and Canada. Vol. 3: 285.

LIFE HISTORY AND ECOLOGY

Little is known about the life history and ecology of *Valeriana uliginosa*. Although the plants can reproduce sexually, reproduction is more common by rhizomes (Meyer). The flowers are dioecious and are pollinated by insects. Seeds are plumed and are likely carried by the wind or an animal vector. The calyx-limb is typically 15-23 flowered with each producing a single achene's per calyx-limb. Plants may have more than one calyx-limb (Gleason 1991).

HABITAT

Valeriana uliginosa inhabits boreal open marly (calcareous) fens and glades in wooded swamps. The Wisconsin DNR – Bureau of Endangered Resources classifies *Valeriana uliginosa* presence in Northern Wet Forests (Mesic), Calcareous coniferous swamps and Tamarack Fens.

This species is usually associated with *Thuja occidentalis*, *Larix laricina* and several species of *Carex*.

The Wisconsin Herbarium gives a generalized description of the habitat at specimen collection sites (see appendix 1). Descriptions of habitat included:

- Calcareous Fen with springs and seeps (500-700 plants in full flower)
- Strip-cut *Thuja* swamp with *Polemonium occidentale*, *Carex gynocrates*, *C. tenuiflora*
- Opening in tamarack swamp

The following species were found on at least one of the five sites on the Chequamegon-Nicolet National Forest (Wisconsin Natural Heritage Program)

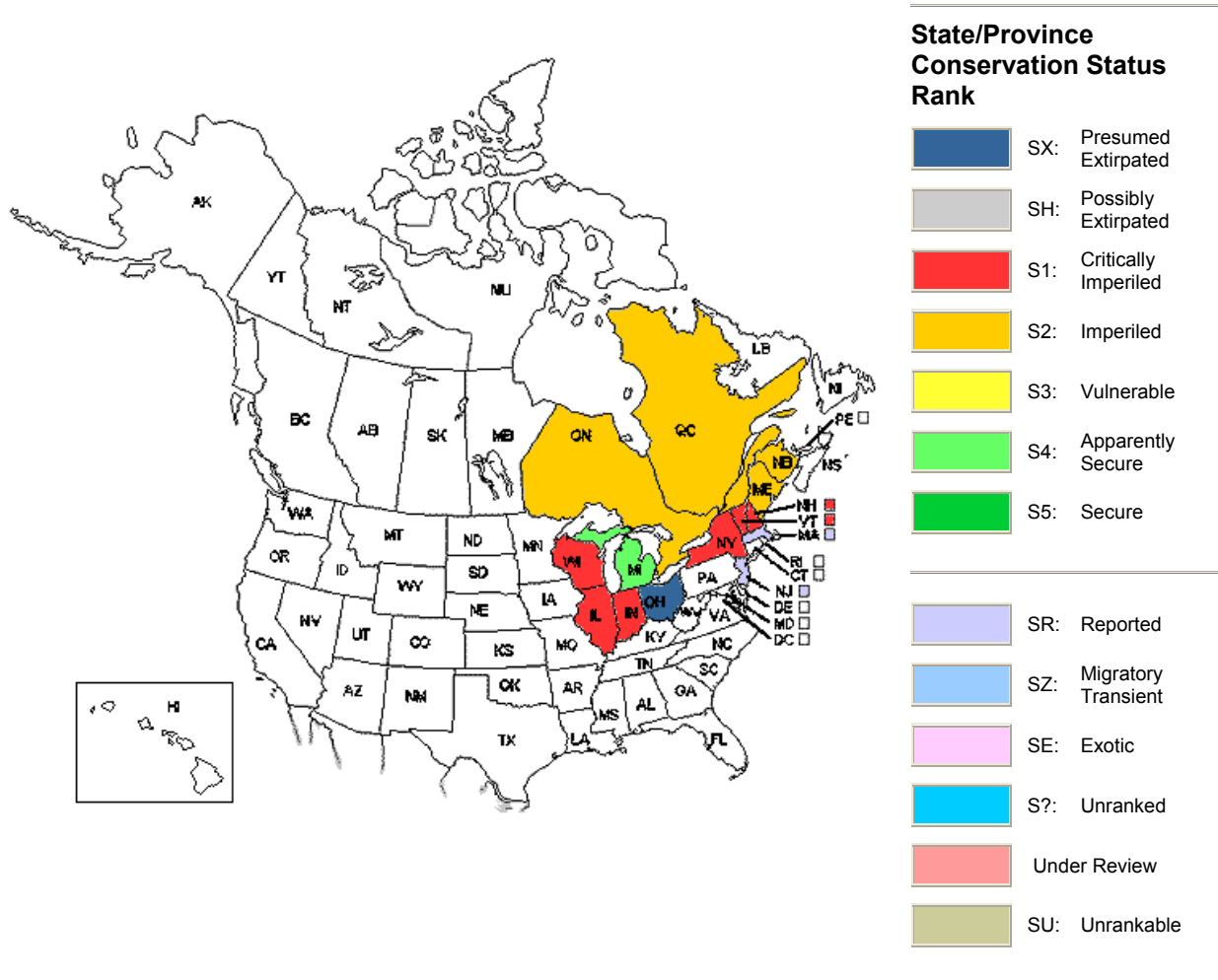
- | | |
|----------------------------------|----------------------------------|
| • <i>Thuja occidentalis</i> | • <i>Coptis greenlandicum</i> |
| • <i>Larix laricina</i> | • <i>Caltha palustris</i> |
| • <i>Picea mariana</i> | • <i>Clintonia borealis</i> |
| • <i>Chamaedaphne calyculata</i> | • <i>Cornus canadensis</i> |
| • <i>Cornus stolonifera</i> | • <i>Cypripedium calceolus</i> |
| • <i>Ledum groenlandicum</i> | • <i>Gaultheria hispidula</i> |
| • <i>Betula pumila</i> | • <i>Iris versicolor</i> |
| • <i>Alnus incana</i> | • <i>Menyanthes trifoliata</i> |
| • <i>Linnaea borealis</i> | • <i>Mitella nuda</i> |
| • <i>Lonicera diervilla</i> | • <i>Moneses uniflora</i> |
| • <i>Rhamnus alnifolia</i> | • <i>Osmunda regale</i> |
| • <i>Vaccinium oxycoccos</i> | • <i>Potentilla palustris</i> |
| • <i>Vaccinium macrocarpum</i> | • <i>Pyrola secunda</i> |
| • <i>Sphagnum</i> spp. | • <i>Rubus pubescens</i> |
| • <i>Carex gynocrates</i> | • <i>Sarracenia purpurea</i> |
| • <i>Carex stricta</i> | • <i>Saxifraga pennsylvanica</i> |
| • <i>Carex tenuiflora</i> | • <i>Smilacina trifoliata</i> |

Habitat analysis from the Wisconsin Natural Heritage program identified two types of vegetation structure in many of the sites:

- Second growth forest with a multi-layered canopy including
 - Overstory, shrub layer, ground layer, and open water
 - Plants may grow in shade beneath the overstory and shrub layers, but not likely to flower in closed canopy
- Recent strip cut forest stands (15 meters wide) with limited or no *Thuja occidentalis* (openings may be requirement for flowering), but associated species of:
 - *Alnus incana*
 - *Picea mariana* (young)
 - *Ledum groenlandicum*
 - *Salix* spp.
 - *Acer rubrum* (young)

Voss (1996) gives the habitat as wet alkaline places including fens, tamarack and cedar swamps, and wet prairies. Michael Fashoway, Information Technology Professional (Conservation and GIS) stated that *Valeriana uliginosa* is not tracked by the Michigan Natural Features Inventory (pers. comm., April 2003).

DISTRIBUTION, ABUNDANCE AND STATUS



The Map references the State/Province Conservation Status Rank and shows the North American Distribution of *Valeriana uliginosa*

A Global Heritage Status Rank of G4Q has been assigned to *Valeriana uliginosa*.

According to the Natureserve website, the rank data is defined as:

“The conservation rank of an element known or assumed to exist within a jurisdiction is designated by a whole number from 1 to 5, preceded by a G(Global), N(National), or S(Subnational) as appropriate. The numbers have the following meaning:

- 1 = critically imperiled*
- 2 = imperiled*
- 3 = vulnerable to extirpation or extinction*
- 4 = apparently secure*
- 5 = demonstrably widespread, abundant, and secure.*

The G4Q rank indicates that *Valeriana uliginosa* is apparently secure in its global distribution, but there are questions concerning its taxonomy. *Valeriana uliginosa* is relatively rare throughout its range from eastern Canada and New England south to Illinois, although it is fairly common in Michigan. *Valeriana uliginosa* has the following State/Province Conservation Status Rank located at NatureServe Explorer 2001 as shown in Table 1.

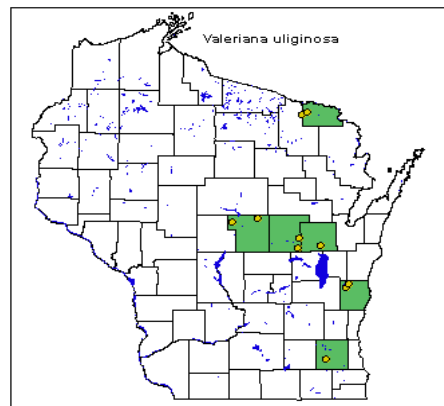
Table 1: State and Province Rank of *Valeriana uliginosa*

State or Province	Status Ranking	Definition of Status
OH	SX	Presumed Extirpated
IL, IN, NH, NY*, VT, WI	S1	Critically Imperiled * Borderline (S1S2)
ME Canada: NB, ON, QC	S2	Imperiled
MI	S4	Apparently Secure
MA, NJ Canada:	SR	Reported

Valeriana uliginosa is present on the Hiawatha National Forest and designated as a Regional Forester Sensitive Species on the Chequamegon-Nicolet National Forest.

Wisconsin Distribution:

The Wisconsin DNR lists the synonym *Valeriana sitchensis* ssp. *uliginosa* as a threatened species in Wisconsin as of November 1, 1981. The Wisconsin distribution map was displayed in the Natural Resource Conservation Service Plant database (http://plants.usda.gov/cgi_bin/topics.cgi). This map shows *Valeriana uliginosa* distribution in Vilas, Portage, Waupaca, Outagamie, Sheboygan and Waukesha Counties.



Wisconsin State Herbarium has seventeen *Valeriana uliginosa* specimens collected from the counties shown in Table 2.

Table 2. Wisconsin Counties where *Valeriana uliginosa* sample located # collection sites

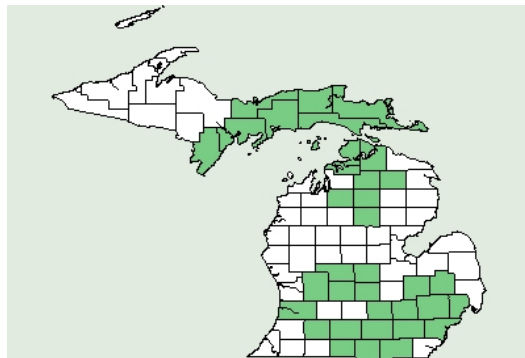
Florence	4
Outagamie	3
Portage	1
Sheboygan	7
Waukesha	1
Waupaca	1

The Wisconsin Natural Heritage program has documented nineteen total occurrences of *Valeriana uliginosa* in the State of Wisconsin with at least four of those occurrences recorded as historical. Of those nineteen total occurrences, five occurrences are documented on the Chequamegon-Nicolet National Forest.

According to Steve Spickerman, West Zone Plant Ecologist for the Chequamegon-Nicolet National Forest, occurrences on the Chequamegon-Nicolet are restricted to the eastern half of the forest (pers. comm., April 2003).

Michigan Distribution:

The Michigan Distribution map for *Valeriana uliginosa* was located on the Natural Resource Conservation Service Plant Database (http://plants.usda.gov/cgi_bin/topics.cgi). This map shows *Valeriana uliginosa* distribution in the following Upper and Lower Peninsula Counties: Menominee, Delta, Schoolcraft, Alger, Luce, Mackinac, Chippewa, Emmet, Cheboygan, Charle Voix, Otsego, Montmorency, Kalkaska, Crawford, Roscommon, Kent, Montcalm, Ionia, Clinton, Gratiot, Genesee, Lapeer, Allegan, Ingham, Livingston, Oakland, Macomb, Wayne, Washtenaw, Jackson, Calhoun, Kalamazoo, Branch, Hillsdale, and Lenawee. The Michigan Natural Features Inventory program does not track *Valeriana uliginosa* [Schools and Fashoway (per.comm., March 2003)].



Natural Resource Conservation Service Plant database
Michigan Distribution of *Calypso bulbosa*

VIABILITY AND POTENTIAL THREATS

The decline of *Thuja* swamps as a viable community and the high deer populations are the primary threats for this species on the Chequamegon-Nicolet National Forest. Future influences of global warming may affect the ability of cedar communities to adapt to changing microclimatic conditions and to compete with communities shifting to the north [Fewless and Spickerman (pers. comm., April 2003)].

The 1999 US Forest Service Region 9 Draft species literature review (Schmoller) for *Valeriana uliginosa* identifies several potential short and long-term threats. These threats are paraphrased from the 1999 draft.

Forest Encroachment:

This species shows a decided preference for openings within the forested fen. In years past, these sorts of openings might have been created and maintained by fire and blow downs. Many of these openings are strip cuts from a few decades ago that were never reclaimed by the adjacent *Thuja occidentalis* forest. *Valeriana uliginosa* occupies many of these manmade openings. However, while *Thuja occidentalis* is not re-vegetating these openings (largely because of an overabundance of White-tail deer which browse the young seedlings in winter) these openings are being invaded by earlier successional species such as *Alnus incana*, *Salix spp.*, *Acer rubrum*, and *Picea mariana*. As a result, *Valeriana uliginosa* is receding from the expanding wet forest edge and is declining beneath the *Alnus* and *Salix*.

Wetland Impacts:

Activities that directly and indirectly impact this plant's wetland habitat pose a potential threat to population viability. Hydrologic alteration caused by road construction or wetland filling or draining can cause such impacts. Ongoing commercial and residential development in southern Wisconsin and Michigan also pose a threat. Agriculture can also cause wetland impacts, through wetland draining, draw down of the water table for irrigation, and fertilizer or chemical runoff.

Logging:

In the short term, logging operations help maintain forest openings; however, caution should be used to avoid wetland damage from logging operations.

Miscellaneous:

A relative of *Valeriana uliginosa* is a popular herbal medicine. This could lead to demand for the species. According to Susan Trull, Forest Botanist for the Ottawa National Forest, invasive species including *Valeriana officinalis* and *Cirsium palustre* may impact *Valeriana uliginosa* as they compete within cedar swamps. [Trull (pers. comm., July 2003)].

RESEARCH AND MONITORING

There is no quantitative monitoring of this species, although periodic site visits are conducted on the Chequamegon-Nicolet National Forest to verify presence/absence. Future plans may include more rigorous monitoring of known rare plant sites. (Spickerman (pers. comm., April 2003)]. There is very limited information concerning the life history of this species and general ecology. Questions for future research and monitoring may include:

- How specifically adapted is *V. uliginosa* to pH, competition and fluctuations in the water regime?
- How rapidly does this element reproduce by seed? By spread of the rhizomes?
- What is the status of cedar regeneration, cause of limited regeneration and solutions for increasing stand viability?

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APPENDIX 1:

Collection data for seventeen *Valerian uliginosa* specimens from the Wisconsin Herbarium
Species data is presented as it appeared in the Herbarium records.

1. Location: Waukesha County Habitat: Calcareous Fen with springs and seeps. 500-700 plants in full flower. Collector: Meyer, Thomas Collector Date: 6/28/89
2. Location: Sheboygan County Habitat: N/A Collector: Goessl, Chas Collector Date: 6/24/1918
3. Location: Florence County: Collections 3,4,5, and 6 are all from the same site Habitat: Strip-cut Thuja swamp with <i>Polemonium occidentale</i> , <i>Carex gynocrates</i> , <i>C. tenuiflora</i> . BER1998. Flowers white; scattered throughout. Collector: Fuller, A.M Judziewicz, Emmet J. Collector Date: 7/4/1980
4. Location: Florence County Habitat: Strip-cut Thuja swamp with <i>Polemonium occidentale</i> , <i>Carex gynocrates</i> , <i>C. tenuiflora</i> . BER1998. Flowers white; scattered throughout. Collector: Judziewicz, Emmet J Collector Date: 7/4/1980
5. Location: Florence County Habitat: Strip-cut Thuja swamp with <i>Polemonium occidentale</i> , <i>Carex gynocrates</i> , <i>C. tenuiflora</i> . BER1998. Flowers white; scattered throughout. Collector: Judziewicz, Emmet J. Collector Date: 7/8/1982
6. Location: Florence County Habitat: Strip-cut Thuja swamp with <i>Polemonium occidentale</i> , <i>Carex gynocrates</i> , <i>C. tenuiflora</i> . BER1998. Flowers white; scattered throughout. Collector: Judziewicz, Emmet J. Collector Date: 7/8/1982
7. Location: Outagamie County Habitat : Cedar swamps Collector: Roden, Aug. Collector Date: 6/13/1928
8. Location: Outagamie County Habitat: Open marshy ground Collector: Smith, A. H. Collector Date: 6/10/1929
9. Location: Waupaca County Habitat: Collection Valley of Wolf River Collector: Rogers, Walter E. Collector Date: 6/13/1944
10. Location: Portage County Habitat: Damp meadow Collector: Koeppen, Robert C. Collector Date: 6/3/1955
11. Location: Sheboygan County Habitat: N/A Collector: Goessl, Chas Collector Date: unknown
12. Location: Sheboygan County Habitat: Opening in tamarack swamp Collector: Fassett, N.C. Collector Date: 7/11/1934

13. Location: Outagamie County Habitat: N/A Collector: Rogers, Walter E. Collector Date: 6/21/1928
14. Location: Sheboygan County Habitat: Opening in tamarack swamp Collector: Fassett, N.C. Collector Date: 7/11/1934
15. Location: Sheboygan County Habitat: N/A Collector: Goessl, Chas Collector Date: 6/17/1903
16. Location: Sheboygan County Habitat: N/A Collector: Goessl, Chas Collector Date: 6/24/1918
17. Location: Sheboygan County Habitat: Marsh Collector: Shinnars, L.H, Collector Date: 5/30/1938